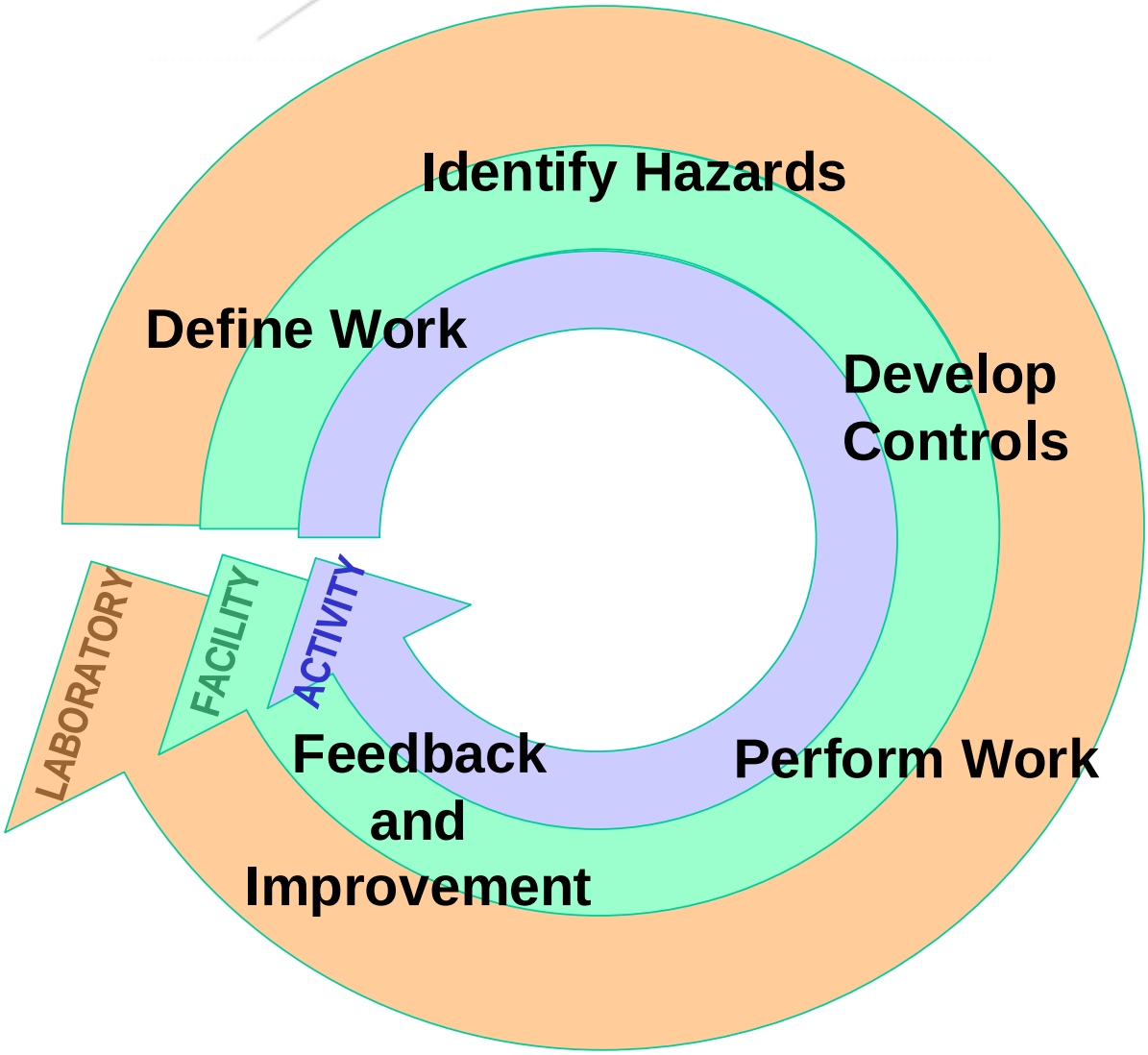
BROOKHAVEN
NATIONAL LABORATORY



Integrated Safety Management Self-Assessment Report FY02

EXECUTIVE SUMMARY

DOE verified BSA's Integrated Safety Management System (ISMS) in May 2000. Since the verification, BSA has continued to develop, implement, and improve management systems and processes that address ISMS core functions and guiding principles.

A review of performance of some of the key management systems that contribute to definition and deployment of ISM core functions and guiding principles has been completed. Significant successes and areas for management attention are discussed below. Additional discussion for specific management systems is included in the main body of this report.

Significant Successes

- *Sustained ISO 14001 Registration:* In June 2002, independent auditors re-certified BNL's Environmental Management System (EMS) declaring it to be in conformance with the ISO 14001 standard and BNL's own requirements. The audit results clearly indicated that organizations have implemented the ISO 14001 system and are beginning to realize some benefits. Continued strong performance is evident in the management of regulated waste generation rates and industrial waste recycling rates. Since 1992, routine operations waste streams are down 81percent, 73 percent, and 88 percent for radioactive waste, mixed waste, and hazardous waste, respectively. The Pollution Prevention (P2) program continues to be effective. Voluntary involvement, particularly in the scientific organizations, is increasing. In FY02, $119K was invested in P2, and the annual cost savings from these investments is estimated to be $268K.

- *Activity-Level Work Planning and Control:* The cornerstone of ISM for activity-level work had been BNL ES&H Standard 1.3.5, Planning and Control of Experiments and ES&H Standard 1.3.6, Work Planning and Control for Operations. These legacy documents have now been integrated into the Work Planning and Control for Experiments and Operations Subject Area. In addition to combining, clarifying, and improving legacy standards, the subject area incorporated three additional sections on Conducting Self-assessments, Guests and Visitors Performing Work, and Off-site Work. The subject area also addresses all pertinent comments from recent DOE Assessments, Management System Maturity Determination, and Management System Self-evaluations. Additionally, 71 percent of workers responding to a work planning involvement survey indicated they felt involved with the work planning processes. Virtually all responders felt they understood the hazards associated with their work, and they were aware of their authority to stop work. Note: While the survey results were positive, and the response rate was fairly strong given that it was voluntary involvement, a higher and more consistent response rate would have provided more confidence in the results.

- *Hazardous Material Transportation Program:* BNL completed a Transportation Safety Re-engineering Project to bring the Hazardous Material Transportation Program into compliance with applicable DOE, federal, and state regulations and other contractual requirements. Documentation of all required Safety Assessment Methodologies (hazard analysis and controls for transportation activities) and supporting milestones were completed either on or ahead of schedule. A detailed methodical process was used to determine the appropriate set of transportation activities requiring review. The thoroughness of the process provides Laboratory management with high confidence that transportation activities are being identified and appropriate controls are established.

- *Training and Qualifications*: BNL continues to sustain performance levels for the completion of required employee training. Throughout FY02, the completion rate has been consistently maintained at approximately 96 percent. Performance for guest and visitor required training was maintained at a fairly consistent average of approximately 85 percent. However, significant improvement in the lowest performing organization through FY02 has been observed (from ~15 percent to ~70 percent).

- *Excess Building Demolition*: Obsolete and deteriorating buildings contribute to the hazard profile of BNL. They also consume resources that could be redirected to address other institutional hazards. In FY02, BNL obtained $1.3M in incremental operating funding from DOE-SC for the demolition of several excess buildings. The agreement included DOE's approval to meet the "matching funds" requirement with contributed services from Plant Engineering, thereby minimizing the impact on the G&A budget. The project was completed without a lost-time injury, on time, and within budget.

- *Corporate Oversight*: The BSA Board continues to have a strong involvement in ES&H oversight of BNL. The third corporate oversight review was conducted in October and November 2001. BSA senior management identified four areas of importance to BNL operations for assessment, including leadership changes, management systems feedback and improvement, organizational and institutional self-assessments, and Price-Anderson Amendments Act (PAAA) and Quality Program effectiveness. This last area was augmented by a review conducted in September and early October (2001) of the Laboratory's response to DOE Headquarters Office of Price-Anderson Enforcement (OE) findings on the PAAA Program. Additionally, in August 2002, BSA initiated a Laboratory Operations Committee review at BNL to assess operational matters and discuss lessons learned from current practices across BNL, ORNL, and PNNL. This type of corporate oversight provides a forum for broad-based, senior management guidance, direct exchange of best-in-class operational processes and lessons learned, and an in-depth understanding of the issues confronting BNL.

- *Assessment Program Improvements*: Several improvements to BNL's assessment program have been implemented. The Integrated Assessment Subject Area was published in September 2000. The Subject Area includes requirements and guidance for organizational (vertical) and management system (horizontal) assessment activities. A management system maturity evaluation process was implemented as part of the BNL Quality Program verification initiative. The maturity evaluation process, which evaluates management systems in three areas (approach/definition, deployment/ implementation, and assessment/improvement) has been highly successful and has received accolades from several DOE entities. Corrective action management has been substantially improved and sustained. The improvements have been largely the result of increased management attention and improved tracking and reporting capabilities provided through the Assessment Tracking System (ATS).

  Additionally, beginning in FY03, BNL senior management implemented a quarterly field observation program. This program coordinated by the BNL Independent Oversight Office, is designed to have senior management present to observe actual work in progress performed by BNL personnel and/or contractors. During the work evolution process, an assessment is conducted to determine if work planning and control requirements are effectively deployed at BNL.

Key FY03 Areas of Management Attention

- *Worker Injury Rates:* Laboratory management has observed that occupational injury performance has been decreasing since 2000. Several actions were taken in FY02 to reverse the undesirable trends including a safety awareness day followed by all staff meetings by departments and divisions, initiation of a bi-monthly safety poster series, enhanced case management, and monthly reviews by BNL senior management focusing on responsibility and accountability for management of the potential for worker injuries and the management of lost time as a result of those injuries. Actions being pursued in FY03 include procuring the services of DuPont Safety Resources (DSR) to provide immediate and sustainable improvement in BNL occupational injury performance. DSR is highly respected in the DOE complex for the management of worker injuries. DSR services would include benchmarking, on-site analysis, interviews, plan development, and conducting a leadership workshop. Other activities planned for FY03 include a "Working Safely is a Condition of Employment" communication plan and a review of human resources policies that impact occupational injury performance.

- *Assessment Program:* One of the results of implementing the maturity evaluation process (discussed above) was the recognition of the need to improve systematic processes for the planning and conduct of management system assessment activities. The Laboratory is pursuing institutionalization of the maturity evaluation process and applying it to the full set of management systems in SBMS over a several year cycle. Improvements are also being made to the planning and integration of other management system assessment activities. To support this initiative, BSA and DOE/BAO are jointly developing a process for a third party evaluation of the management system assessment program.

- *Nuclear Facilities Management:* In April 2001, DOE completed the rulemaking process for promulgating Subpart B, *Safety Basis Requirements* to 10 CFR 830, *Nuclear Safety Management*. The rule requires all nuclear facilities (Category 1, 2, and 3) to have DOE-approved Documented Safety Analysis, Technical Safety Requirements, and an Unreviewed Safety Question process in place by April 10, 2003. The most significant new requirement affecting BNL is that the rule treats the transportation of nuclear materials as a "nuclear facility" during on-site transportation activities. Maintaining compliance with the existing inventory of nuclear material and site infrastructure will require restrictions that will reduce operational flexibility. The Laboratory is developing a nuclear facilities strategic plan that, when implemented, will optimize the nuclear facility footprint to manage risks while maintaining sufficient capability and flexibility for current and future Laboratory needs.

- *Waste Management Funding:* A change in DOE waste management funding (direct EM funding to program funding) in FY03 has required the Laboratory to adjust the business model for funding waste management activities. Continued management attention will be required to ensure a full transition is made without adversely affecting research programs and prevent accumulation of legacy wastes.

- *Key Managerial Positions and Reorganization:* Several key managerial positions, which have a direct impact on Integrated Safety Management, are currently filled with interim appointments. These positions include the Laboratory Director, the Assistant Laboratory Director for Environment, Safety, Health, & Quality, the Environmental Services Division Manager, and the Waste Management Division Manager. BNL expects to fill these positions with permanent staff in the relatively near future. Additionally, the Waste Management Division will be merged with the Environmental Services Division. While systems have matured to a point that new management and reorganization should have little impact on ISM, vigilance is needed to ensure transitions occur without program disruption. To facilitate transition of new managers, BSA has initiated the *Orientation Program for Level I and II New Managers*. This program is designed to introduce new managers to the Laboratory's mission, changing themes, strategic challenges, and business management systems.

- *Fire Protection*: Surveillance testing of fire/heat detectors (required after 15 years of service) indicated a failure rate of approximately 80 percent. Causal analysis indicates that the failures are the result of deficiencies in manufacturing quality control. Costs to replace the detectors are estimated to be approximately $800K (assuming 8,000 detectors are currently installed in Laboratory facilities). This was reported through the DOE ORPS process. DOE-CH favorably acknowledged BNL for self-identifying the problem.

- *Standards-Based Management System:* Progress on subject area development and publication has slowed, particularly for legacy manual conversion. Additionally, many Management System Descriptions are outdated and need to be revised. The SBMS Steering Committee is taking a more active role in setting strategic direction for SBMS deployment, setting priorities, and monitoring progress of subject area development and revision. Additionally, awareness of the status of implementation and deployment of subject areas at the Management System Steward level needs to be improved to ensure progress in system implementation is consistent with balanced priorities. One of the objectives of the management system assessment program is to systematically improve this awareness.

INTRODUCTION

DOE verified BSA's Integrated Safety Management System (ISMS) in May 2000. Since the verification, BSA has continued to develop, implement, and improve management systems and processes that address ISMS core functions and guiding principles.

BNL's ISMS is defined and implemented through a set of management systems. This report provides a summary review of selected key management systems that contribute to ISM. It is not intended to be a comprehensive evaluation of all aspects of BNL's ISMS. The information has been largely developed by reviewing performance documentation generated as part of the Laboratory's self-assessment program and augmented by information from other reviews and assessment activities conducted by other organizations external to BSA/BNL (e.g., DOE, EPA, GAO, etc.).

Summaries for the following management systems are discussed in this report:

- Environmental Management System
- Facility Operations
- Facility Safety
- Hazardous Material Transportation Safety
- Integrated Assessment Program
- Real PropertyAsset Management
- Standards-Based Management System
- Training and Qualifications
- Work Planning and Control
- Worker Safety and Health

Environmental Management System

- In June 2002, independent auditors re-certified BNL's Environmental Management System (EMS), declaring it to be in conformance with the ISO 14001 standard and BNL's own requirements. The audit results clearly indicated that organizations have implemented the ISO 14001 system and are beginning to realize some benefits. Areas for improvement were primarily associated with documentation control.

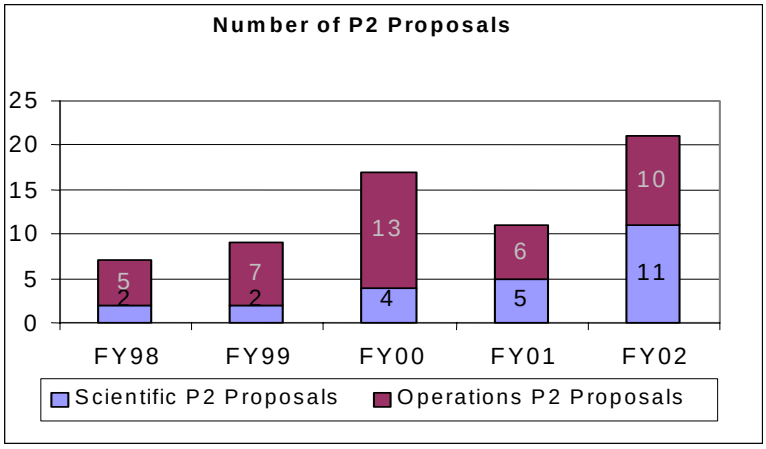
- Environmental compliance status continues to improve. The Laboratory conducted focused self-assessments on air emissions (radioactive and non-radioactive) and PCB management. The results indicated that these programs are being effectively managed. The air emission assessment identified a potential noncompliance at the Brookhaven LINAC Isotope Producer (BLIP) related to regulatory requirements for radioactive airborne emissions. Other findings from both the air emissions assessment and the PCB assessment were related primarily to minor regulatory issues. The Laboratory was over 99 percent compliant with SPDES permit requirements. Progress continues to be made on achieving conformance to Suffolk County Article 12. The project plan for upgrading all site storage tanks is approximately 50 percent complete, with $1.3M committed through FY03. All regulatory reports were submitted on or ahead of schedule.

- Continued strong performance is evident in the management of regulated waste generation rates and industrial waste recycling rates. Since 1992, routine operations waste streams are down 81 percent, 73 percent, and 88 percent for radioactive waste, mixed waste, and hazardous waste, respectively. BNL has sustained excellence in achieving high rates of recycling since the mid 90's. Over the last several years, performance of recycling has been included as a DOE/BSA Critical outcome and has achieved a high "excellent" to "outstanding" rating. In FY02, action was taken to rekindle interest and participation in the recycling program by the BNL population.

- BNL continues to meet energy management objectives. BNL has sustained excellence in reducing energy use, which is currently 28 percent (BTU/ft^2) below the 1985 baseline. To continue the success, new projects are ongoing to replace inefficient equipment, expand system capability, and recommission the operation of the existing systems.

- The graph below shows the trend in the rate of submittal of Pollution Prevention (P2) proposals since FY98. The trend clearly shows increasing interest and participation of scientific personnel in the BNL P2 Program. This is attributed to the greater awareness created by EMS and P2 integration into work planning.

  In FY02, $119K was invested in P2, and the annual cost savings from these investments is estimated to be $268K. Some of the key issues impacting P2 program management include loss of direct EM funding, the DOE goals are far reaching, and "low-hanging fruit has been picked." Since pollution prevention is a core EMS commitment, continued management attention will be given to ensure the sustained success of the program.



- A change in DOE funding for waste management became effective at the beginning of FY03; replacing direct line-item funding for BNL waste management (from EM) with funding now included in individual programs/projects (primarily SC). Management attention will be required to prevent this change from adversely affecting research programs or resulting in accumulation of legacy wastes.

Facility Operations Management

- An assessment of the Facility Use Agreement (FUA) program indicated that the program is maturing and meeting its operational objectives. In spring/summer 2001, BNL conducted an initiative to review and revise, as necessary, all FUAs. Global changes, including format changes, addition of hyperlinks, and addition of a new section to capture historical information, were completed and facility-specific modifications were made as required. This assessment activity was rated outstanding by DOE/BAO.

- In FY02, a Building Manager program website was developed and deployed providing an excellent mechanism to disseminate information and improve awareness of various aspects of the Building Manager program. Monthly Building Manager meetings are held and have proven to be a valuable forum for communication of requirements, as well as obtaining feedback from building managers.

- A Space Management Subject Area is being developed to promote effective and efficient use of buildings and facilities to support achievement of BNL critical outcomes and to provide equitable distribution of the costs associated with maintaining space. The subject area will describe the processes for acquiring, paying for, using, repairing and/or modifying, and returning space that is no longer required for BNL's mission.

Facility Safety

- In April 2001, DOE completed the rulemaking process for promulgating Subpart B *Safety Basis Requirements* to 10 CFR 830, *Nuclear Safety Management*. The rule requires all nuclear facilities (Category 1, 2, and 3) to have DOE-approved Documented Safety Analysis, Technical Safety Requirements, and an Unreviewed Safety Question process in place by April 10, 2003. The most significant new requirement affecting BNL is that the rule treats the transportation of nuclear materials as a "nuclear facility" during on-site transportation activities. Maintaining compliance with the existing inventory of nuclear material and site infrastructure will require restrictions that will reduce operational flexibility. BNL is developing a nuclear facilities strategic plan, which when implemented, will optimize the nuclear facility footprint to manage risks while maintaining sufficient capability and flexibility for current and future BNL needs.

- The Management System, while fairly mature, underwent extensive modification and upgrades (due to external assessment recommendations and issuance of revised 10 CFR 830 Rules) during FY00 and FY01 to address identified weaknesses in the Authorization Basis aspects of the program. A Facility Authorization Basis Program Description was developed to provide the overview and to link the requirements and guidance that institutionalize the processes necessary for BNL facilities to achieve and maintain an authorization basis. The Management System Description was also incrementally upgraded in FY02.

- Progress towards accelerator authorization basis upgrades is evident with the majority of active work on or ahead of schedule. The BLIP upgrade remains behind schedule primarily due to the potential to require monitoring of radioactive air emissions. Negotiations with the EPA to determine the best path forward are in progress.

- Progress towards Accelerator Safety Subject Area enhancements has been slower than initially anticipated. This issue is somewhat Lab-wide and is further discussed under the Standards-Based Management System (SBMS).

- Surveillance testing of fire/heat detectors (required after 15 years in service) indicated a failure rate of approximately 80 percent. Causal analysis indicates that the failures are the result of deficiencies in manufacturing quality control. Costs to replace the detectors are estimated to be approximately $800K (assuming 8,000 detectors currently installed in Laboratory facilities). This was reported through the ORPS process. DOE-CH favorably acknowledged BNL for self-identifying the problem.

Hazardous Material Transportation

- BNL completed the Transportation Safety Re-engineering Project to bring the hazardous material transportation program into compliance with applicable DOE, federal, and state regulations and other contractual requirements. The program documentation includes a Management System Description, a Program Description, and four subject areas.

- A Transportation Safety Working Group supports the program, and responsibilities for a BNL Transportation Safety Officer have been assigned.

- Documentation of all required Safety Assessment Methodologies (hazard analysis and controls for transportation activities) and supporting milestones were completed either on or ahead of schedule. A detailed methodical process was used to determine the appropriate set of transportation activities requiring review. The thoroughness of the process provides BNL management with high confidence that transportation activities are being identified and appropriate controls are established. The approach also enabled identification of operational enhancements that lowers the level of risk for on-site transportation activities. Additional milestones, all completed ahead of schedule, include

development and completion of training programs and the development of a hazardous material transportation website.

Integrated Assessment Program

- Several improvements to BNL's assessment program have been implemented. The Integrated Assessment Subject Area was published in September of 2000. The subject area includes requirements and guidance for organizational (vertical) and management system (horizontal) assessment activities. A management system maturity evaluation process was implemented as part of the Quality Program verification initiative. The maturity evaluation process, which evaluates management systems in three areas (approach/definition, deployment/implementation, and assessment/improvement) has been highly successful and has received accolades from several DOE entities. Corrective action management has been substantially improved and sustained. The improvements have been largely the result of increased management attention and improved tracking and reporting capabilities provided through the Assessment Tracking System (ATS).

- One of the results of implementing the maturity evaluation process (discussed above) was the recognition of the need to improve systematic processes for the planning and conduct of management system assessment activities. The Laboratory is pursuing institutionalization of the maturity evaluation process and applying it to the full set of management systems in SBMS over a several year cycle. Improvements are also being made to the planning and integration of other management system assessment activities. To support this initiative, BSA and DOE/BAO are jointly developing a process for a third party evaluation of the management system assessment

- The BSA Board continues to have a strong involvement in ES&H oversight of the Laboratory. The third oversight review was conducted in October and November 2001. BSA senior management identified four areas of importance to BNL operations for assessment, including leadership changes, management systems feedback and improvement, organizational and institutional self-assessments, and Price-Anderson Amendments Act (PAAA) and Quality Program effectiveness. This last area was augmented by a review conducted in September and early October (2001) of the Laboratory's response to DOE Headquarters Office of Price-Anderson Enforcement (OE) findings on the PAAA Program. Additionally, in August 2002, BSA initiated a Laboratory Operations Committee review at BNL to assess operational matters and discuss lessons learned from current practices across BNL, ORNL, and PNNL. This type of corporate oversight provides a forum for broad-based, senior management guidance, direct exchange of best-in-class operational processes and lessons learned, and an in-depth understanding of the issues confronting BNL.

- Additionally, beginning in FY03, BNL senior management implemented a quarterly field observation program. This program, coordinated by the BNL Independent Oversight Office, is designed to have senior management present to observe actual work in progress performed by BNL personnel and/or contractors. During the work evolution process, an assessment is conducted to determine if work planning and control requirements are effectively deployed at BNL.

- Although ES&H self-assessment activities, particularly those at the management system level, are maturing, greater emphasis needs to be placed on analysis of assessment results (both on a routine basis and at year end) to ensure that planned actions and schedules are consistent with balanced priorities established by BNL management and the Critical Outcomes, Objectives, and Measures (Contract Appendix B).

- Standing meetings of organizational representatives and various working groups are proving to be a valuable component of the Management System Steward's on-going assessment activities. Examples include Building Managers, ES&H Coordinators, Training Coordinators, Quality Representatives, and the Chemical Management System Advisory Group. These meetings provide a forum for Management System Stewards/Points of Contact to communicate topics of interest and also solicit feedback from line organizations impacted by program issues and initiatives.

Real Property Asset Management

- A maturity evaluation was performed on the Engineering Design Subject Area in July 2001. It demonstrated that the subject area was not yet fully implemented by all BNL organizations that perform engineering design functions. Affected line organizations were asked to review their internal engineering design processes to identify and document gaps between their current processes and the requirements of the subject area. The reviews have been received with completion dates to close the gaps.

- BNL led a 10-person team in the development of the first ever, "bottoms up" required maintenance and capital renewal estimate for the BNL conventional plant. The team also authored a white paper on the subject, which provided BNL input to the DOE maintenance policy formulation. A Maintenance Management Subject Area is being developed to replace, in part, the legacy Operations and Maintenance Manual.

- The BNL Site Master Planning Process is mature and performing well. Real property assets are being planned for, managed, tracked, and upgraded as required in order to meet BNL's current and future programmatic needs. Potential upcoming regulatory changes driven by the DOE Real Property Management Order could have a significant impact on the BNL process.

- The F&O Maintenance Initiative Team has been meeting regularly to track items identified in an assessment of analysis of maintenance and capital renewal, Condition Assessment Surveys (CAS), Facility Information Management System (FIMS) population, and timely response to data calls and to discuss maintenance issues. The possibility of not achieving a CAS cycle of three years (i.e., to survey one-third of the site floor area per year) was identified as a significant issue during these meetings. Without this data, funding assumptions would be faulty. To resolve this issue, the team took immediate action. The CAS procedure was revised to incorporate a multi-tiered inspection methodology created by the team. One key aspect of the procedure change is that permanent buildings with a continuing mission will be inspected on a three-year cycle. Buildings without a continuing mission will not have the capital renewal component of the CAS inspection included. In addition, Intelligent Systems & Engineering Services (ISES) was subcontracted to supplement BNL's CAS inspections to enable a three-year inspection cycle.

- BNL's Maintenance and Capital Renewal Analysis has had a positive influence with DOE Headquarters (HQ) and has been used as a point of reference to review other national laboratories' maintenance and capital renewal programs. The CAS cycle time performance has gone from marginal to outstanding due to the additional resources allocated toward this activity. This represents one of the largest improvements in this year's performance. DOE HQ and BAO have favorably acknowledged this performance.

Radiological Control

- During FY02, the second cycle of triennial assessments was completed and the third cycle was initiated. Several of the assessments performed during FY02 confirmed significant improvement in the functional elements from the results of earlier assessments, e.g., training and sealed source accountability. In addition, very positive feedback of performance was presented in the report for functional element "Organization and Administration." The follow-up assessment from the DOE Laboratory Accreditation Program (DOELAP) external dosimetry team confirmed significant improvements over the previous visit.

- Radiological footprints were completed for 9 of 11 facilities scheduled for completion in FY02. Information for baselining was generated through interviews, walkthroughs, records review, and limited characterization data. The data has been collated in tables for ease of use or abstracted where ongoing activities for characterization exist (e.g., AGS lead, steel, and block yard). The

baseline documents will be updated as additional information is generated. Progress for FY02 was less than initially planned, primarily because of a late start and also because there was significantly more archival material to review than anticipated.

- Analytical Services Laboratory (ASL) operations continued to improve during FY02. Additional protocols were added and inter-Laboratory testing scores improved over last year's outstanding rating. Over 12,000 analyses were performed in FY02. The ASL became US EPA National Environmental Laboratory Accreditation Program (NELAP) Certified in October 2001. This is recognized as a major achievement. Performance Evaluation Test Scores in both National and NY State Blind Testing Programs for CY2002 were 96 percent Overall Satisfactory and are considered Excellent.

- During FY02, the overall performance of the Radiological Assistance Program (RAP) was outstanding. RAP activities during this year were overwhelmingly dominated by post 9/11 responses. RAP field deployment activities occurred largely unabated for the entire year, with several stints of 24/7 coverage at remote locations. Total RAP activities exceeded previous years by almost a factor of three. Feedback on RAP performance from DOE-BAO and DOE-EH has been overwhelmingly positive. Region 1 (BNL/BAO) is considered the premier field team by DOE.

- Technical qualification of the staff is still excellent. There are two CHPs, one CHMM, two PEs, two CIHs, three CSPs, and 24 NRRPT RCTs. However, bench strength remains an area of concern with some improvement noted. Some key roles are without immediate back-up capability; however, this has been offset with better-than-anticipated development of intermediate candidates. There is an excellent pool of mid-level talent. Long-term outlook is excellent. Candidates need to be identified and their professional development accelerated for entry-level FS Representative positions in the coming year.

- During FY02, a Radiological Control Technician Trainee Program was initiated. The program is designed to take an individual from a baseline status, and through a three-year course, generate a fully qualified RCT. The program goals address three objectives: 1) Provide in-house capability to ensure long-term staffing needs are met, 2) Provide career opportunities in a technical arena for minorities and current BNL employees, and 3) Reduce costs for radiological field services.

Standards Based Management System

- While there have been many subject areas and other SBMS documents (e.g., Program Descriptions) published or updated, progress on subject area development and publication has slowed, particularly for legacy manual conversion. Additionally, many Management System Descriptions are outdated and need to be revised. The SBMS Steering Committee is taking a more active role in setting strategic direction for SBMS deployment, including setting priorities and monitoring progress of subject area development/revision and implementation. One of the objectives of the management system assessment program is to systematically improve this awareness.

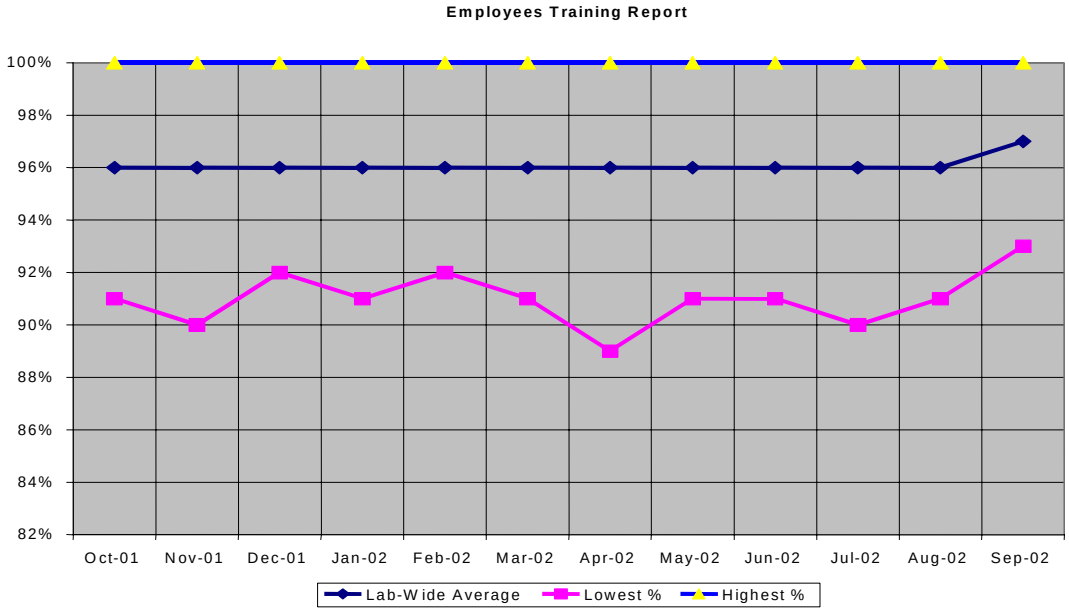
- An assessment of the requirements management process conducted by the Independent Oversight Office in FY02 concluded that Management System Stewards understand their responsibilities and are satisfactorily executing them for requirements management processes. Opportunities for improvement included the need to clarify SBMS process descriptions, establishing expectations for requesting variances, improved action management, and improved records management.

Training and Qualifications

- The primary focus in FY02 has been to sustain the levels of training completion for employees and improve performance for identifying and completing required training for guests and contractors. Improvements in the new Guest Information System (GIS) at BNL (a personnel database for guests and contractors) and how it feeds information to the training database aided in this effort.

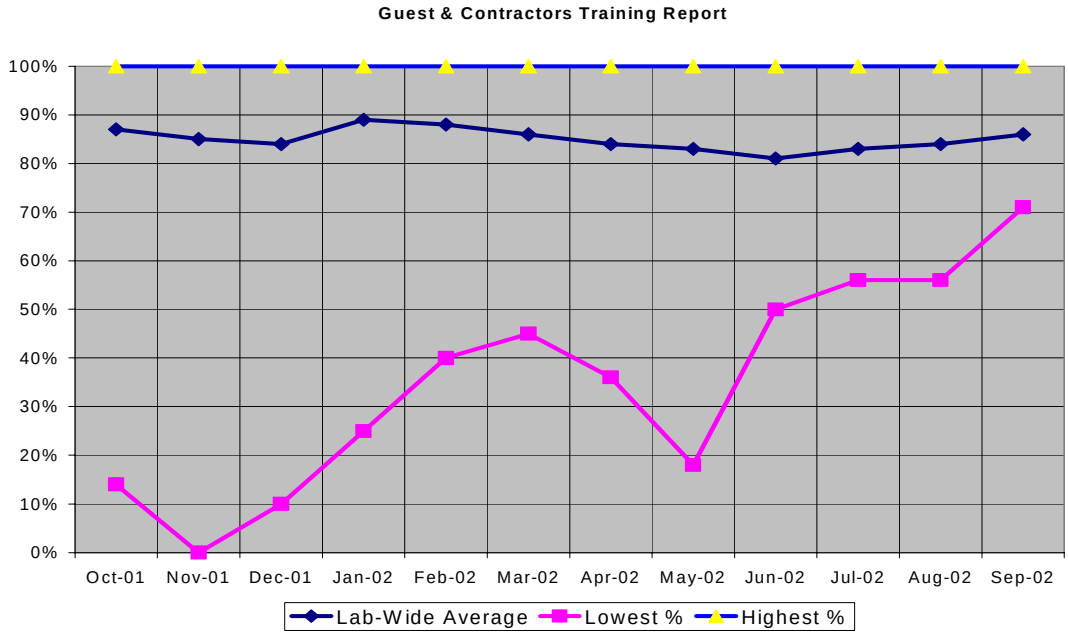
- The graph below shows that BNL continues to sustain performance levels for the completion of required training of employees. The BNL average for required employee training has been sustained at 96 percent. The lowest Department/Division has been generally above 90 percent. The primary cause for the lowest performing organization is the large numbers of requirements, which are often associated with varied work assignments. Individuals are assessed and tracked for the different roles and tasks that they perform. However, not all tasks and roles are performed at all times, so some qualifications lapse because the work is not currently being performed. (Yet requirements remain attached to individuals and completion is tracked to aid in the planning of, and ensures full qualification for, future task assignments.) A lapsed qualification is only significant when an individual performs work for which a valid qualification is needed.

  In addition, fluctuations in completion percentages occur due to an increased number of new hires (such as added summer staff and students), changes in requirements, and changes in work assignments and staff transfers.



- The graph on the following page shows required training status for Guests and Visitors has been maintained at a fairly consistent average of approximately 85 percent. It also shows clear improvement in the lowest performing organization through FY02. (*Note:* The specific organization having the lowest completion rate can vary from month to month). In several months during the first half of FY02, none of the required training for guests and visitors had been completed in the lowest performing organization. By the end of the year, performance had improved to approximately 70 percent. This improvement is primarily attributed to increased use of GIS on site, resulting in improvements in the site-wide collection of data for our guest/contractor population, which enables more facility-specific training links to be applied to varying staff members based on work to be performed, the type of visit, and length of stay. In addition, new mechanisms have been implemented to aid in tracking data for only those guests and contractors who are currently here performing

workon-site. Unlike employees, BNL's non-employee population may have lapsed qualifications that do not need to be renewed until they are performing work on-site.



- The focus of effort for FY03 will be to incorporate medical surveillance fully into BNL's required qualifications program based on work to be performed. In addition, effort will be focused on improving the Training-GIS connection further, wherever possible.

Work Planning and Control

- Work Planning and Control processes are operating effectively and within the requirements of the Work Planning and Control for Experiments and Operations Subject Area and management expectations. Work Planning and Control processes, by their very nature, are integrated within other BNL processes. This integration was markedly improved with the recent publishing of a new Work Planning and Control for Experiments and Operations Subject Area. In addition to combining, clarifying, and improving former legacy ES&H Standard 1.3.5, Planning and Control of Experiments and ES&H Standard1.3.6, Work Planning and Control for Operations, this subject area incorporated three additional sections on Conducting Self-assessments, Guests and Visitors Performing Work, and Off-site Work. The subject area also addressed all pertinent comments from recent DOE Assessments, Management System Maturity Determination, and Management System Self-Evaluations. It is hoped that guidance given in the new Subject Area will help to encourage future employee feedback into the work planning processes.

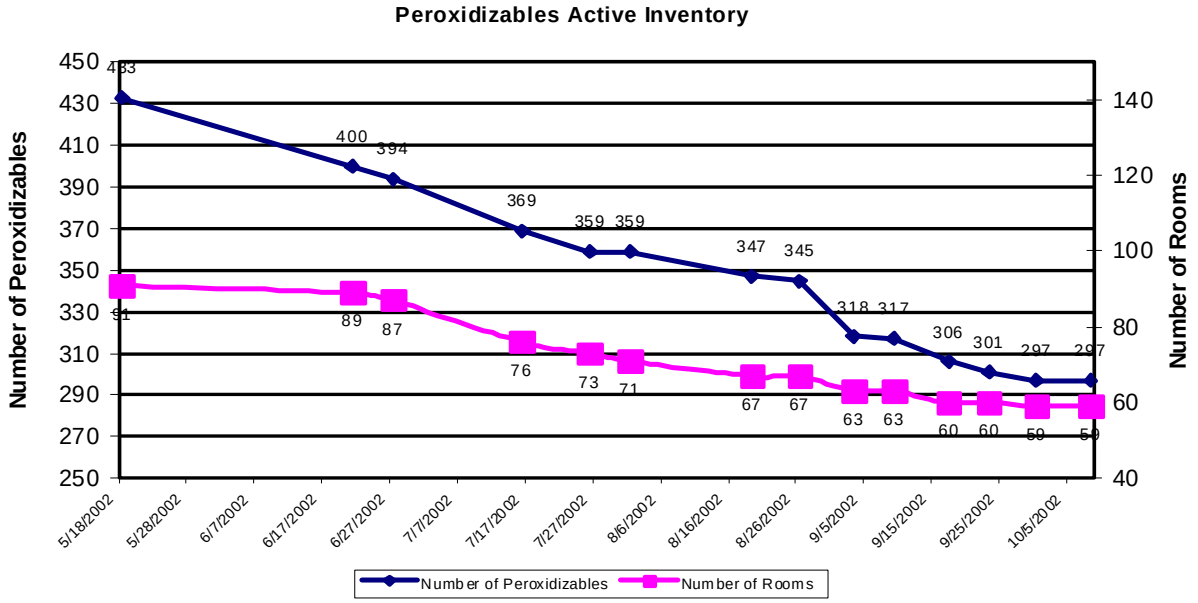
- 71 percent of workers responding to a work planning involvement survey indicated they felt involved with the work planning processes. Virtually all responders felt they understood the hazards associated with their work and they were aware of their authority to stop work. It's important to note, however, that the average response rate per Department/Division was approximately 42 percent, with the highest being 100 percent and the lowest 7 percent. While the survey results were positive, a higher and more consistent response rate would have provided more confidence in the results.

Worker Safety and Health

- A number of Subject Areas have been developed and published to improve the management of specific hazards related to Laboratory operations including Respiratory Protection, Lead, Asbestos, and Biosafety in Research. Additional extensive program documentation efforts were expended post September 11 with regard to preparation for analysis and recovery procedures for a potential chemical or biological weapon of mass destruction incident on site. The site's Noise and Hearing Conservation practitioner qualification and procedure documentation program was finalized in FY02 and received high praise from a BAO reviewer.

- The Electrical Safety Review performed by the BNL Independent Oversight Office identified the need to improve some aspects of electrical safety both at the institutional and at the organizational level. At the institutional level, it was determined that some clarification of BNL requirements was necessary. At the organizational level, the review team identified the need to improve review/ approval of procedures, documentation of training programs, LOTO and caution tag recordkeeping, periodic review/inspection of LOTO implementation, electrical equipment labeling, and housekeeping.

- Chemical safety performance in FY02 was rated as excellent based on measures related to inventory management and the management of peroxide forming chemicals. Measures related to chemical disposition for employee terminations were rated as Outstanding. A total of 54 employees with chemical containers assigned, terminated employment from BNL in FY02; 53 of these employees reconciled their chemicals within one month of their termination date. The remaining termination was dispositioned within 90 days. This successful performance is primarily attributed to improved communication and follow-up. Management focus on peroxide forming chemical management has resulted in a significant reduction in risk due to aging chemicals. The graph below clearly shows the total number of peroxide forming chemicals on site was reduced from 433 chemicals to less than 300 chemicals or a reduction of 31.3 percent. The number of rooms that contained peroxide forming chemicals was reduced from 91 rooms down to 59 rooms, or a reduction of 35.2 percent.



- BNL also successfully piloted the use of Personal Data Assistant (PDA) scanners for improving management of chemical inventories. The PDA scanners will enable organizations to electronically manage and verify chemical inventories during routine ES&H field inspections.

- Worker injury rates and other assessment activities suggest the need to increase field presence of safety professionals. An anticipated shift in focus from program documentation to field presence has been accelerated. Increase in field presence was measured for the second, third, and fourth quarters of FY02, with over 5,700 hours by safety professionals. Two new Industrial Hygiene Technician positions were created in FY02 with funding support continued into FY03. Additionally, in FY02 18 individuals completed a 10-hour OSHA-certified inspector-training program.

- Laboratory management has observed that occupational injury performance has been decreasing since 2000. The trend is clearly evident in the graph below. Several actions were taken in FY02 to reverse the undesirable trends, including a safety awareness day followed by all staff meetings by departments and divisions, initiation of a bi-monthly safety poster series, enhanced case management, and monthly reviews by BNL senior management focusing on responsibility and accountability for management of the potential for worker injuries and the management of lost time as a result of those injuries. Actions being pursued in FY03 include procuring the services of DuPont Safety Resources (DSR) to provide immediate and sustainable improvement in BNL occupational injury performance. DSR is highly respected in the DOE complex for the management of worker injuries. DSR services include benchmarking, on-site analysis, interviews, plan development, and conducting a leadership workshop. Other activities planned for FY03 include a "Working Safely is a Condition of Employment" communication plan and a review of human resources policies that impact occupational injury performance.